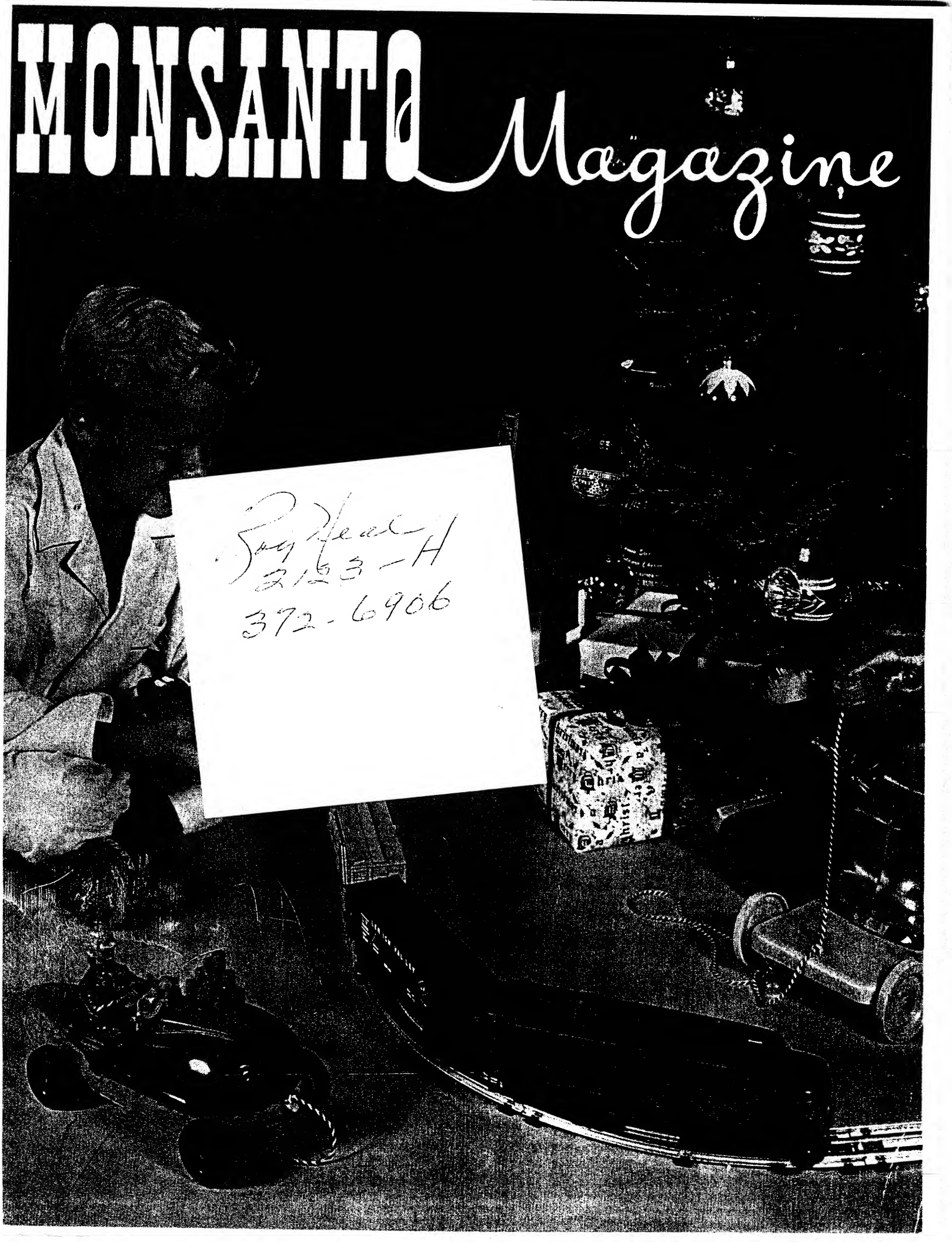
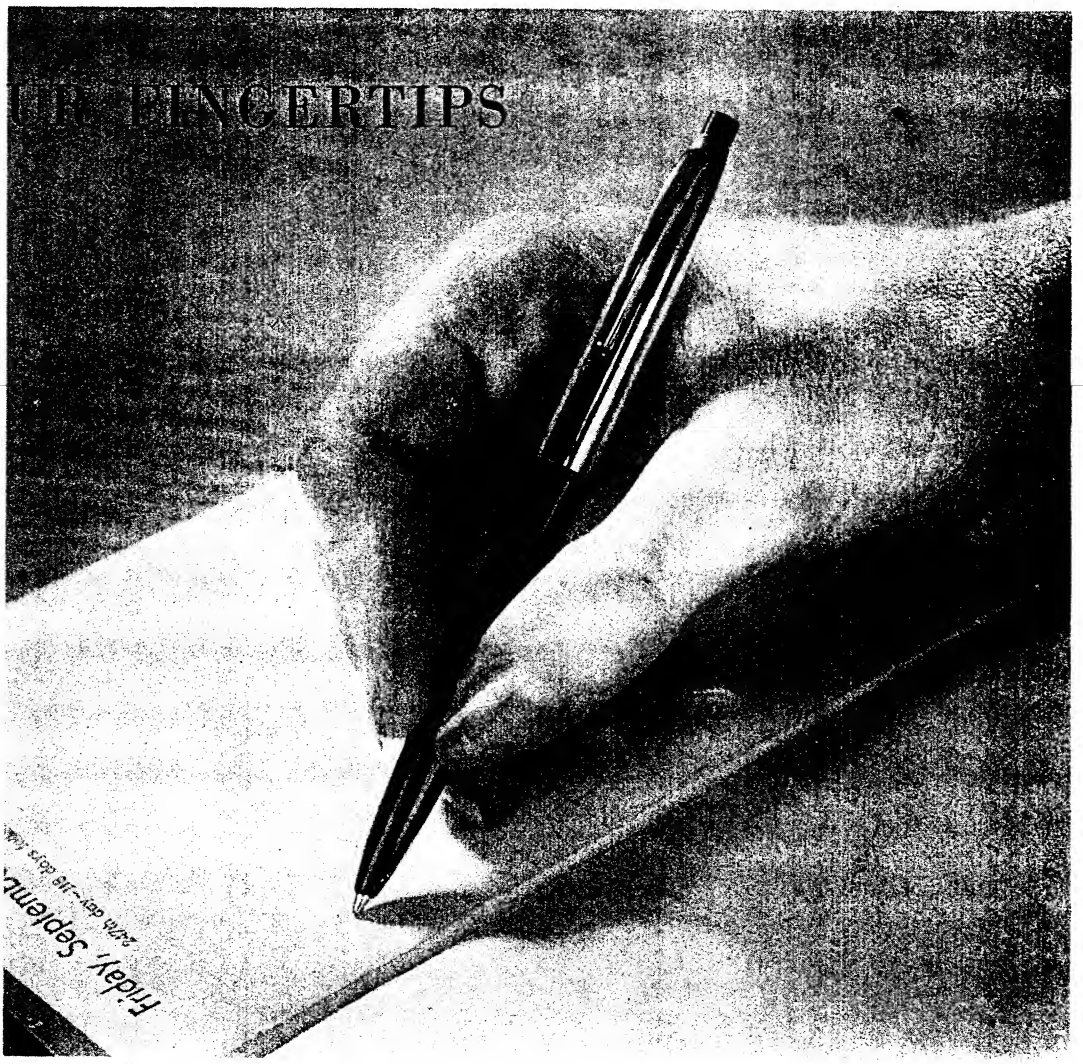
MONSANTO Magazine



DRAMA AT YOUR FINGERTIPS



A ballpoint with a future, Sheaffer's new *Fineline 500* sets out to write the first of 200,000 words before it will have to be refilled. Also making its debut is a ballpoint ink, a key to the pen's success and a new chapter in the hunt for better writing fluids.

ROBERT S. CASEY, chief chemist for the Sheaffer Pen Company of Fort Madison, Iowa, is the logical man to write a mystery story entitled "The Case of the Clogged Fountain Pen." The plot, the villains and the hero have been going through his mind for more than thirty years. Roughly, the story would go something like this:

Two slippery characters, tannin, alias tannic acid, and ferrous sulphate, alias iron salts, meet in a murky vat in an ink company and decide to strike out together in a life of crime. Locked in an ink bottle, they are about to pull their first job when suddenly the cap comes off and they are sucked up into the rubber sac of a fountain pen.

Here they seek revenge, breaking down the rubber sac, corroding the pen point and leaving the sediment to clog up the pen. Scotland Yard is baffled.

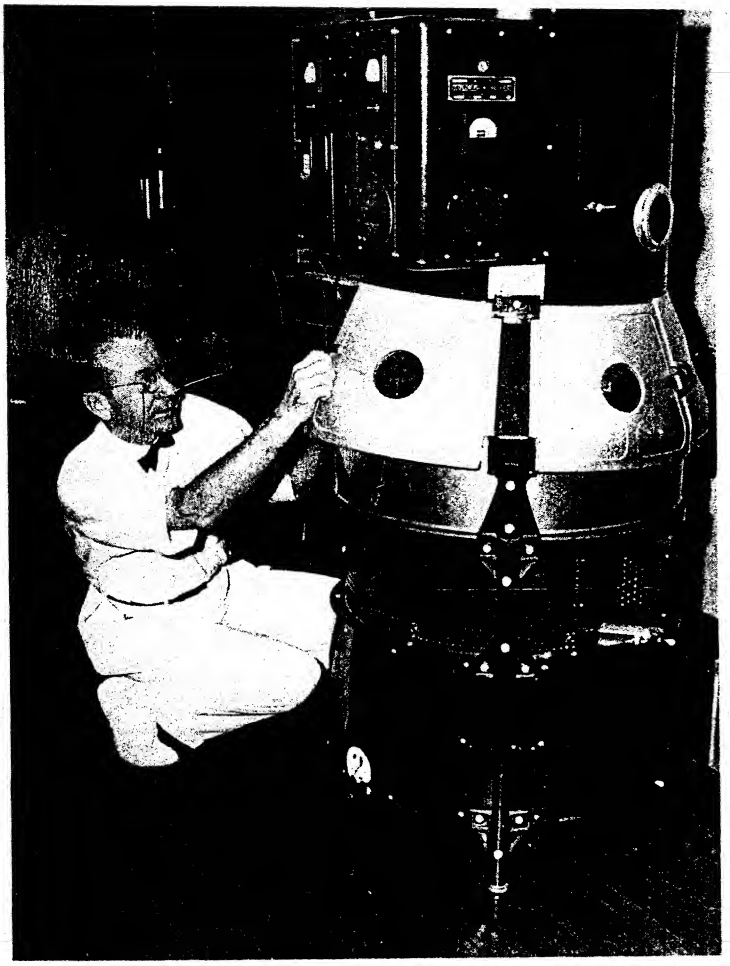
These two characters, it seems, are the essential ingredients in writing ink. This is the cue for the arrival of the mysterious Mr. X, a crafty private eye known for his subtle methods. When the villains return to the vat to start another trail of misdeeds, Mr. X is waiting for them. Rather than make an arrest, he stays between them, keeping them apart and, consequently, out of mischief. Everywhere they go, into the bottle, up into the pen, Mr. X is there.

With their avenues of communication blocked, tannin and ferrous sulphate are finally forced to throw in the towel and, in the last chapter, all three are seen walking hand-in-hand down the straight and narrow, a smooth highway that leads out of the sac, through the pen point and onto the paper.

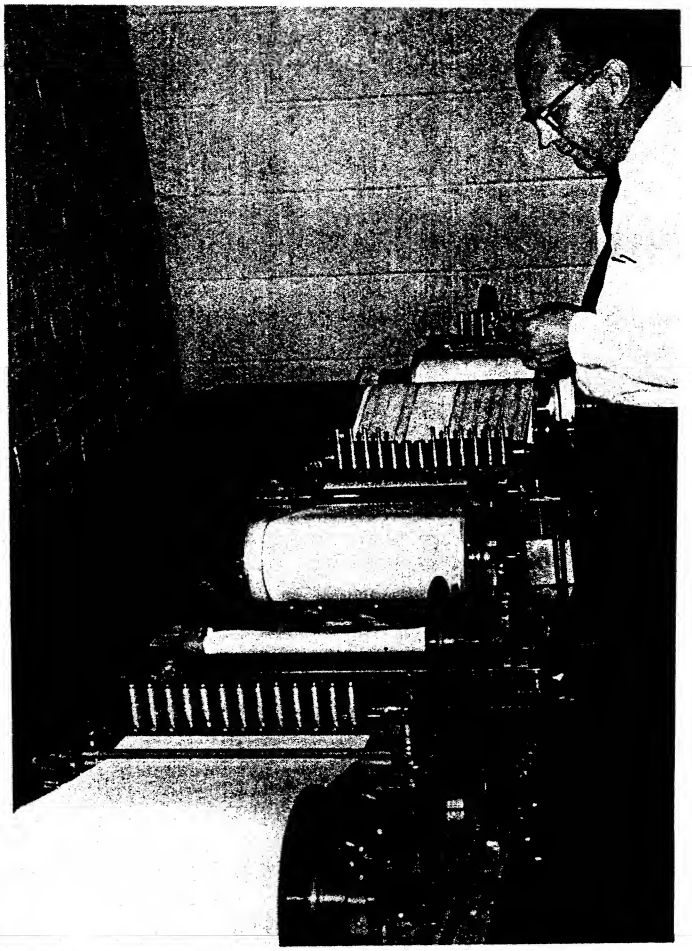
The only "business" that remains is for Mr. X to be identified and this is something Robert Casey will never do. For "The Case of the Clogged Fountain Pen" and how it came to be solved is the story of *Skrip*, "the successor to ink," and the mysterious Mr. X is a secret ingredient that has made it "the largest-selling writing fluid in the world."

Casey first began looking for Mr. X back in 1919. In more technical terms, he describes it as a search for "an ingredient that would keep a balance between the tannin and the ferrous sulphate and thus make a stabilized writing fluid." Casey was a young man then, just out of Columbia University with a Master of Science degree in chemistry. Sheaffer's was young, too, just a few years away from the back-room workshop of Walter A. Sheaffer's small jewelry store in Fort Madison. Casey remembers the workbench in the shop where the parts for the world's first lever-filling fountain pen were punched out. With Sheaffer's and Casey both a little older, a new job arose, a problematic one. A wonder ink, made from a supposedly spectacular formula that Sheaffer had bought, had been on the market a year when it began coming back to the company in a virtual blue flood. Customers complained that it clogged their pens. Some who had bought the new Sheaffer *Lifetime* pens and filled them with the ink blamed the resulting failure on the pens themselves. Anyone acquainted with ink, however, knew who the villains were. It was then that Casey went in search of Mr. X.

All that can be said about the project that followed is that one day in 1922, some three years later, Casey held a test tube containing the first few ounces of *Skrip*. The formula and ingredients that finally succeeded remain the top company secrets and have even caused Sheaffer's to turn down a large government contract rather than reveal them.



Robert S. Casey, the chief chemist at Sheaffer's, inserts a writing sample in the fade-ometer, a machine which simulates actual sunlight with carbon arc lamps and so tests the permanency of writing fluids. Casey joined the company in the early 1920's and was instrumental in development of *Skrip*, a writing fluid which Sheaffer's calls "successor to ink."



Ballpoint cartridges are tested for writing mileage on a battery of machines that continuously revolve the cartridges, in a perfect Palmer scroll, on a moving roll of paper. C. H. Lindsly, director of laboratories at Sheaffer's, inspects a cartridge to see if it will meet the standards demanded of ballpoint pens.

Companies, like Monsanto, who supply Sheaffer's with the raw materials for *Skrip*, label their shipments with a code number instead of the name of the material. The most Sheaffer's will reveal is that certain Monsanto preservatives are used to prevent the growth of microorganisms in the ink. Asked what *Skrip* is, one company official will tell you only that it is a "mixture of a certain amount of one code number with a certain amount of another."

Casey, however, is quite prepared to show you what it *does*. He will show you the delicate remains of a handful of carbon steel pen points that were soaked in a number of popular writing inks for several days. A few he won't show you; they completely dissolved after one day's immersion. *Skrip*, however, will only discolor the point, the test revealed. Rubber sacs and other pen parts received similar treatment. Once again *Skrip* stood out as the mildest agent of all.

Another advantage is dramatized in a simple experiment able to be performed by anyone who has a few flat-bottom test tubes and enough self-possession to go into a drug store and buy six different brands of ink. In his own experiments at Sheaffer's, Casey filled six test tubes with different brands of blue-black ink, allowed them to sit for two weeks, then corked the tubes and turned them upside down. Thick sediment blackened the bottoms of three of the tubes and ran down the sides like the dregs of a heavy wine. In a test with royal blue inks, three out of five showed heavy deposits; with jet black inks, two out of six. The tubes containing *Skrip* came through the ordeal virtually clean.

Since the fluid must pass through a honeycomb of channels, five to ten one-thousandths of an inch wide, on its way from reservoir to point, it is easy to see why some fountain pens frequently choke up when they are called upon to say something. Thanks to Mr. X, *Skrip* users have been taking the caps off their pens with an air of confidence.

A sequel to the story may soon be built around another Sheaffer brain-child—a Mr. X of ballpoint inks. This narrative may be even more dramatic than the first, since the background for the story is the ballpoint business itself, a "gold rush" affair when it first opened up late in World War II.

Sheaffer's first heard about it from the government. Air Force pilots, coming back from South America, told of a pen they could buy in Argentina that would write in the stratosphere. Washington called Sheaffer's Research and Development director, Wilbur K. Olson, told him the specifications of the pen and asked for 20,000. "That was half a day's production," says Olson, "but we still needed a priority for tiny steel balls." The government allowed them half a ton. "All the manufacturers in the world," says Olson, "couldn't have used up that many in a hundred years." It soon became common knowledge, however, that

the government was interested in ballpoint pens and "everyone started working on them."

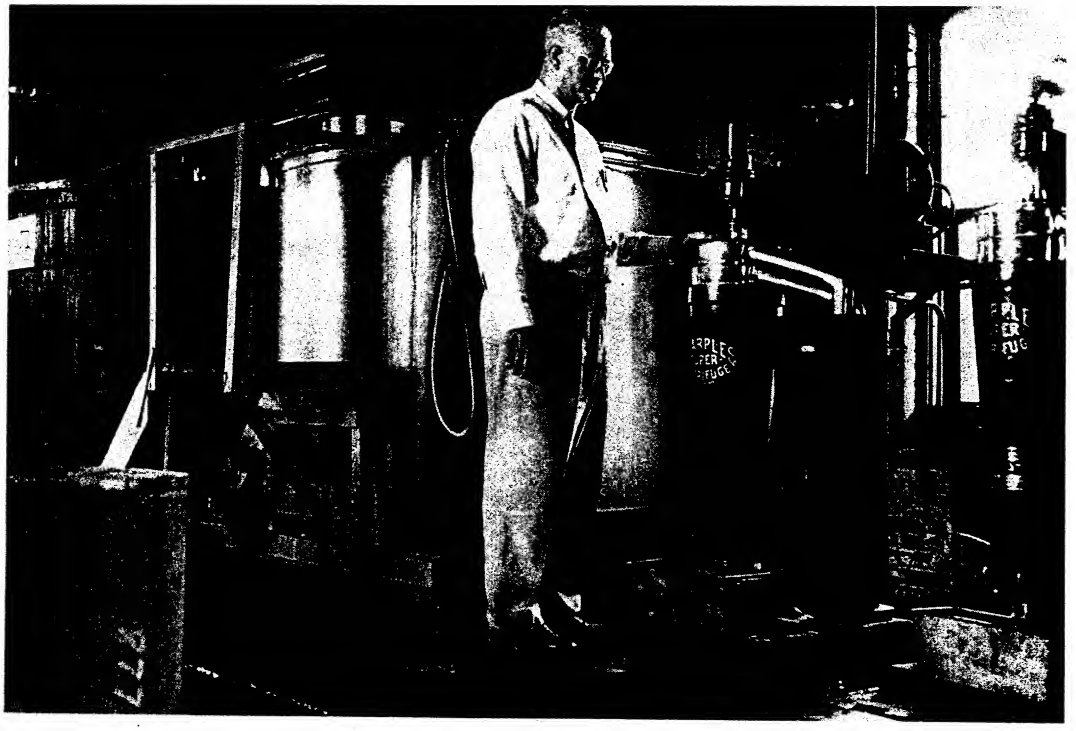
Actually, United States and foreign patents on ballpoint pens date back over fifty years; the first ballpoint made its appearance in 1895. C. H. Lindsly, director of the Sheaffer laboratories, looks back upon the sudden craze with the air of a man whose serious scholarship has been interrupted by the noise of a circus passing beneath the window of his study. "It looked like everybody in the country who had a screw machine began making ballpoint pens," he says. Sheaffer's, however, realized that the ballpoint would never take the place of the fountain pen. "Ballpoints," says Lindsly, "are primarily for convenience, not for any great amount of writing."

Just how many words are in a ballpoint, of course, is a matter of some speculation. To estimate how long different cartridges and inks will hold out, Sheaffer's employs a group of girls who do nothing but copy out novels with ballpoint pens. For the average boy-meets-girl novel, three ballpoint pens will be exhausted by the time boy marries girl. Sheaffer's also relies upon the findings of a battery of four writing machines, each holding as many as thirteen different cartridges and revolving them, in a perfect Palmer scroll, on a moving roll of paper. Every two hours the cartridges are weighed and the amount of ink laid down can be determined.

Probably the biggest factor in performance is the ink. Water-based inks like *Skrip* are not suitable because they contain nothing that will lubricate the stainless steel ball that must be constantly rotating in order for the pen to write. In addition, pigments in oil-based inks are not ground finely enough, so that they are actually strained out in the microscopic space between the ball and the socket, clogging the pen. Ballpoint inks consequently must have a non-water base, one that will provide lubrication, permanence to water, will dry quickly and won't smear. On the writing machines, it must lay down a very precise amount of ink at every cycle, each of which is a circle three inches in circumference.

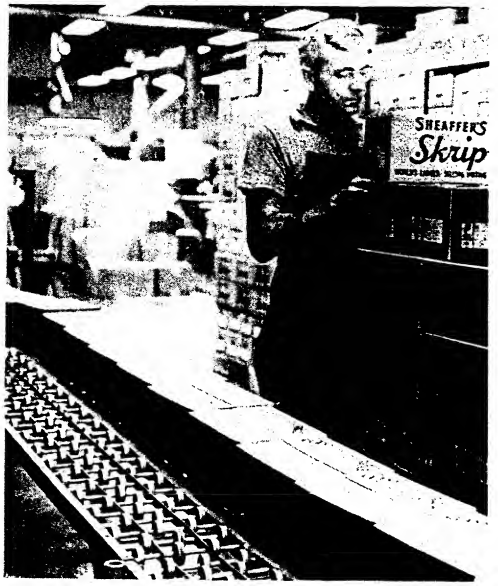
Oil-based inks, however, have one inherent drawback. They never really dry. Oil is absorbed by the paper and remains there unless it is pressed out, as between the pages of a book. Water-based inks, on the other hand, dry by evaporation. In the hope of overcoming the difficulty, Sheaffer's has produced another Mr. X—an ingredient that not only dries by evaporation but also lubricates the working parts of the pen. Mr. X is a spirit, a chemical spirit that is; one of the glycol family. He made his debut early in October when Sheaffer's announced a new line of ballpoint pens—the Sheaffer *Clicker* ($5.00) and the *Fineline 500* ($1.95).

Meanwhile, *Skrip* isn't exhibiting any pangs of jealousy. As one company official says, "Ballpoints are good for taking down hot phone numbers." It will be *Skrip*, however, that continues to write the subsequent love letters.

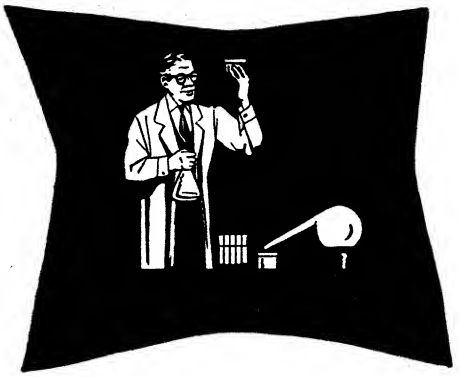


Mike Mitchell, foreman for *Skrip*, is one of the few who know its formula. Ingredients are shipped to the plant by code number, mixed in the vats at left, then sent through centrifuges to remove any impurities which would hinder flow of the fluid from the pen.

From storage tanks, pipes carry *Skrip* into machines that form a vacuum in the bottles, allowing fluid to rush in and fill them. An inspector checks bottles as they move on to capping, labeling and packaging machines. *Skrip* is described as "the world's largest selling writing fluid."

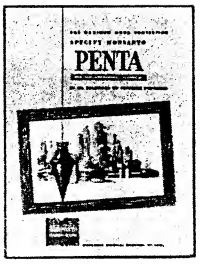


Skrip piles up at the end of the production line. Sheaffer's began with "world's first lever-filling fountain pen," developed *Skrip* to abolish ink-clogged pens.



what they're reading

PENTA



How Monsanto's wood preservative, *Penta*, has gone to work for the railroads, public utilities, farms, homes and industry is told in words and pictures in this new booklet.

Railroads, it is pointed out, are making broad uses of *Penta* in treating ties, flatcar bodies, passenger platforms. St. Louis' Incarnate Word Hospital is built with *Penta* pressure-treated nailing blocks, rough bucks, flashing and roofing strips. Utility firms treat both pole and crossarm with the clean, paintable wood preservative.

Also included is a chart showing how much *Penta* should be used in a variety of applications. The bulletin was put out by the Organic Chemicals Division.

BENTHAL IN RESINS

Uses of Benthal in production of short and medium oil alkyd resins to control the viscosity until the desired acid number is obtained is the subject of a new Organic Chemicals Division bulletin. Benthal, according to the bulletin, improves resin durability, alkali and water resistance and film gloss. Rules are set down to calculate the required amount of the material for alkyds of various oil modifications.

DECORATIVE TREATMENTS

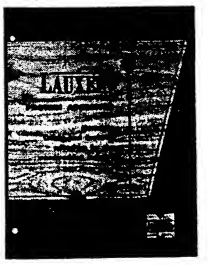
Styrene plastics designers can frequently eliminate costly assemblies with single piece moldings incorporating masked lacquered portions and vacuum metalizing.

Products molded on existing molds can be given new sales appeal with decorative treatments. In the past much attention went to design for injection molding problems with little attention going to decorative problems.

This Plastics Division bulletin stresses designing for decorating problems and includes a section on design.

Basic uses of post molding treatments are described. Major subjects discussed include lacquering, metalizing, printing and hot-stamping, and destaticization.

PROTEIN ADHESIVES



A 24-page Plastics Division booklet deals with protein adhesives for the woodworking, plastic laminating and prefabricated home industries.

The new, illustrated publication discusses Monsanto's *Lauxein* protein adhesives which include casein, soybean and casein-soybean blends.

In a separate section, details of Monsanto's *No-Clamp* gluing process are described. The *No-Clamp* method eliminates cumbersome equipment formerly used in cold press plywood production.

MONSANTO MAGAZINE

VOL. XXXIII, NO. 6 • DECEMBER 1953

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About the cover:

Many a home will have a Christmas scene similar to that featured on the cover of this month's MONSANTO MAGAZINE. And, as in no other year, there is a greater variety of tough, rugged toys made of plastic, such as those shown in the picture. U. S. sales of plastic toys this year will total more than $900,000,000 and shows every promise of going higher. The cover picture was taken by William J. Woeger, using an 8x10 Eastman camera, *Ektachrome* film, five No. 2 flash bulbs, f. 22 at 1/100 second.